

# IDAHO DEPARTMENT OF FISH & GAME.

Jerry M. Conley, Director

MACKAY HATCHERY

Annual Report



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by

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## ABSTRACT

Mackay Hatchery services the Big Lost River drainage, Little Lost River drainage, Birch Creek, and most of the upper Salmon River drainage. Henrys Lake, Island Park Reservoir, Cascade Lake, Ririe Reservoir, and certain north Idaho lakes also receive fish from Mackay Hatchery. Some 60-to-90 high mountain lakes per season are also serviced from Mackay, a part of the statewide hatchery system.

1980-81 was an exceptionally good production year. The total production was 129,810 pounds of fish. A feed conversion ratio of 1:54 was achieved. Species produced were cutthroat, rainbow, brook, coho, cutthroatx rainbow cross-hybrids, and golden trout. Some 300,000 rainbow were held over for the next year's production.

A new roof was installed on house #3. This was the only major maintenance item undertaken during this fish year.

Waters serviced by the Mackay Hatchery and crew received their allocated numbers of fish. A considerable surplus of catchable-sized fish remained and were planted in several reservoirs within the state.

The hatchery is quite remote in location, and is a considerable distance from large urban centers. We do not get a large number of visitors.

We are using all available water at present and the hatchery does not lend itself to much further expansion in fish production.

Mackay Hatchery operates under a low dissolved oxygen situation. Some modification could be made inside the hatchery with the water distribution system to increase oxygen there.

No fish diseases were encountered during the year. Some external parasite problems such as Costia do exist.

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## OBJECTIVES

The objectives of the Mackay Hatchery are to:

1. Raise 100,000 lbs of fish for planting in the service area lakes and streams. These included 6,622 lbs of cutthroat 0-3"; 3,121 lbs of rainbow 0-3"; 107,656 lbs of rainbow 6" or larger; 590 lbs of brook trout 0-3"; 150 lbs of brook trout 6" or larger; 11,557 lbs of coho 0-3"; 8 lbs of 0-3" golden trout; and 106.5 lbs of cutthroat x rainbow hybrids 0-3".
2. To release catchable and fingerling fish in all allocated lakes and streams in the area and other specified locations in the state. Main areas serviced from this hatchery are: Big Lost River drainage, Little Lost River drainage, Birch Creek, and the upper Salmon River drainages. Other specified areas are: Henrys Lake, Island Park Reservoir, Ririe Reservoir, Springfield Lake, Chesterfield Reservoir, Cascade Lake, and various north Idaho lakes.
3. To rear fish for, and plant some 60-90 high mountain lakes per season. Most of these are inaccessible by truck and require planting by helicopter, horseback, or backpack.
4. Special emphasis this past season has been given to rearing some 904,840 cutthroat and 20,060 brook trout for Henrys Lake. Approximately 100,000 of each color, red, green, and yellow, were fluorescent-dye-marked for planting site identification in Henrys Lake. The brook trout were fin-clipped for later identification and future data.

## INTRODUCTION

Mackay Hatchery is located 16 miles west, southwest of Mackay, and 43 miles south of Challis. It is high-country, 6,200-feet above sea level at the hatchery site.

The hatchery receives its water from a large spring area located on the hatchery grounds. We receive approximately 22-cubic-feet-per-second of water. The water is low in available oxygen. The water enters the raceways at a maximum of five-parts-per-million D.O.. Water entering the hatchery building is somewhat lower, from 3-4-parts-per-million. Hatchery water could be enhanced by changing the distribution system to each vat. Water spouts put water into the vats under the surface of the water at present. Raising the system would allow for some aeration.

We are using all available water at present; therefore, little room for hatchery expansion.

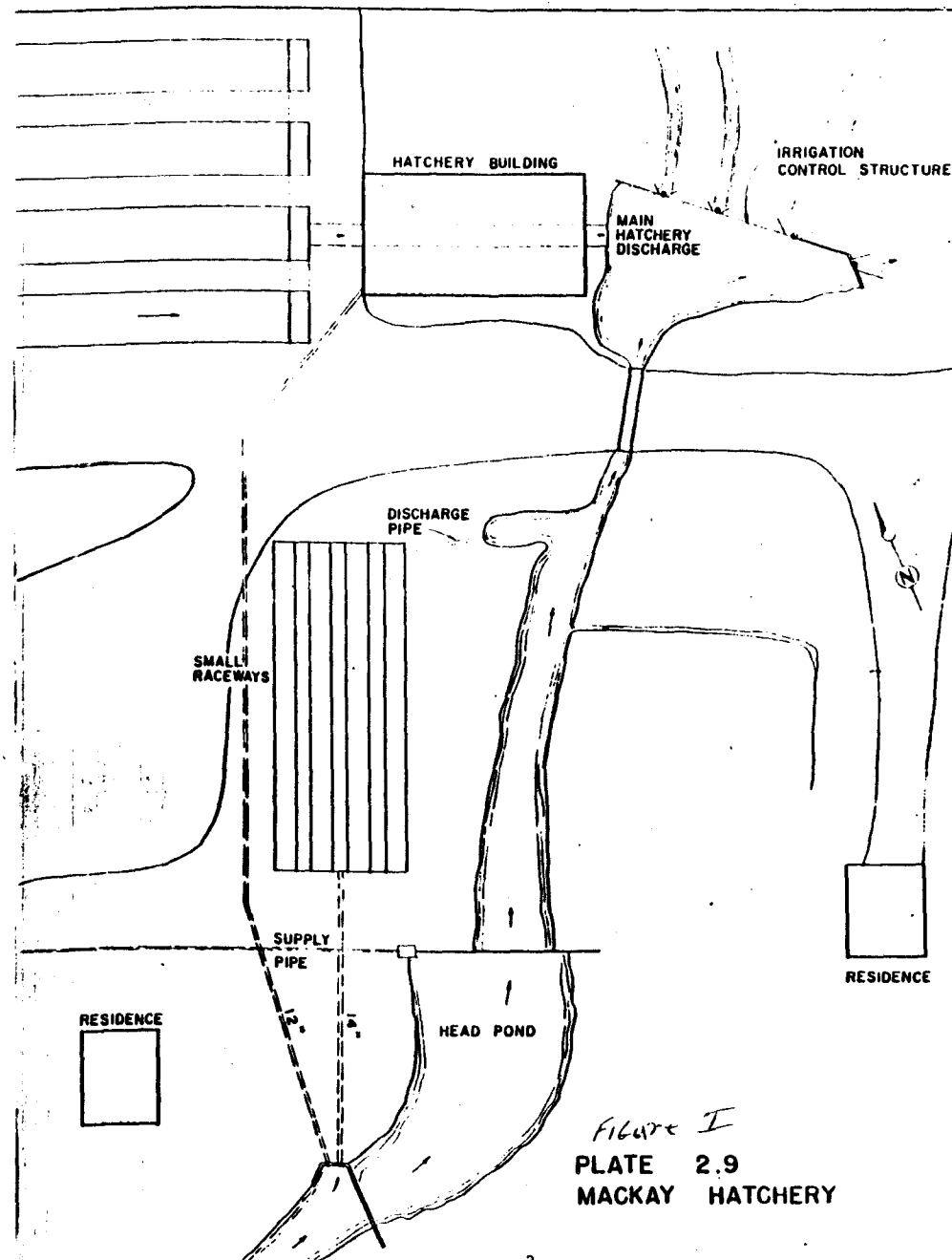
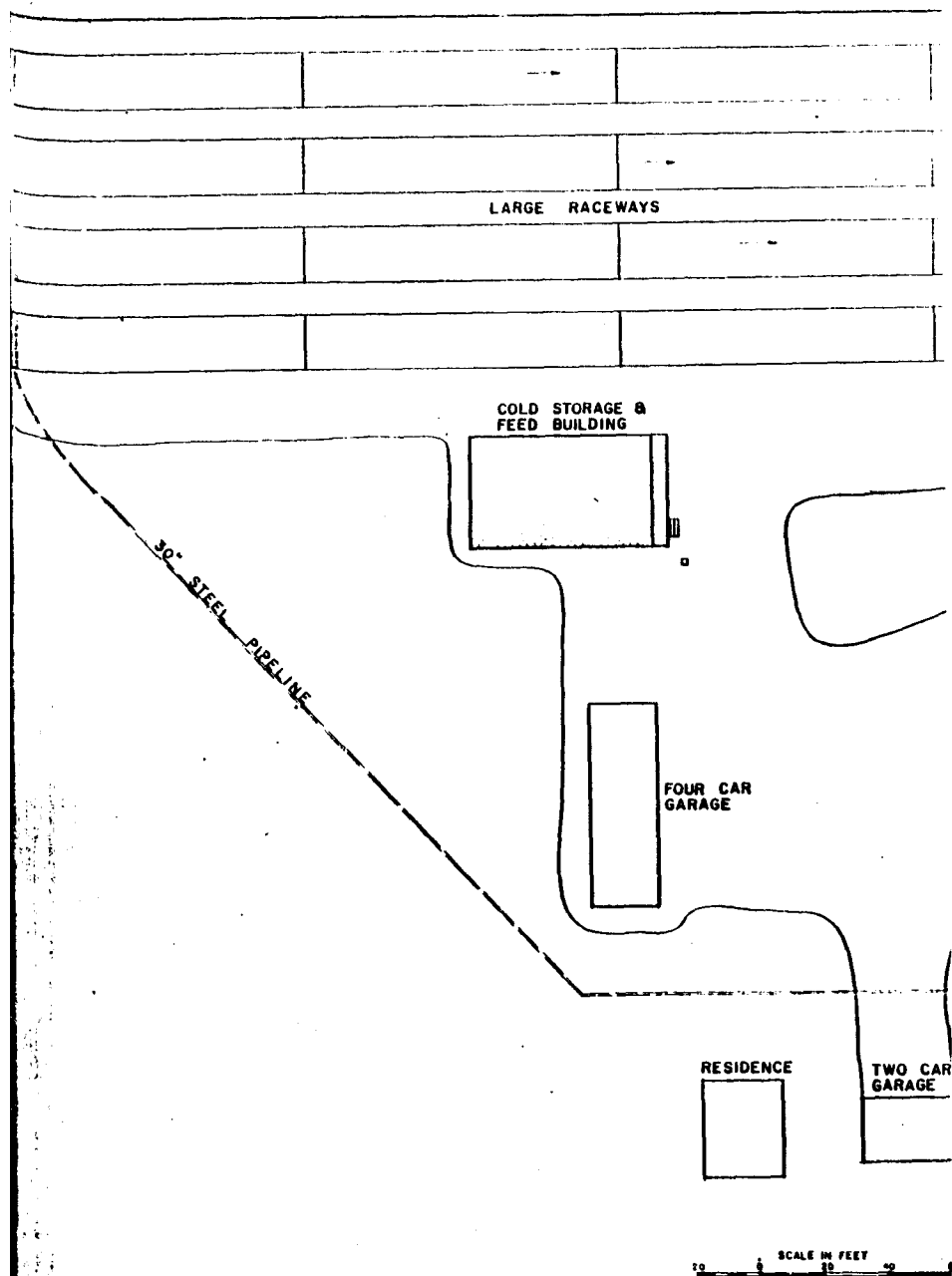


FIGURE I  
 PLATE 2.9  
 MACKAY HATCHERY

The physical features at the Mackay Hatchery are:

Three permanent employees.  
One office and feed storage building.  
One hatchery building housing ten-double stacks of Heath incubator trays. Also, 30 plastic vats for rearing fry and fingerling.  
Eight small raceways, 100-feet x 3-feet x 24-inches.  
Eight long raceways, 400-feet x 8-feet x 32-inches.  
Three permanent employees' residences.  
One four-stall garage building.  
One two-stall garage building adjacent to house #2.  
One spring area with domestic water supply covered.

Physical features diagram, see Fig. 1.

#### FISH PRODUCTION

Fish eggs received at the hatchery were:

Coho	1,089,641
Rainbow	894,880
Brook trout	31,545
Cutthroat	1,085,564
Ct. x Rb. Hybrids	78,880
Golden trout	<u>3,000</u>
Total	3,183,510

The coho eggs were received at Mackay on 3 December 1980. Approximately 160,000 eggs were hatched upon arrival, and others close to hatching. Some losses were experienced due to this proximity to hatching at shipping time. The eggs were delivered to the hatchery by our Department by car from Quilcin National Hatchery. 797,431 fish were reared to planting size from these eggs. 211,033 were planted in Island Park Reservoir; 147,498 were planted in Ririe Reservoir; 339,600 were fluorescent dye-marked and planted at three different sites in Cascade Reservoir; and 99,300 unmarked fish were planted in Cascade Reservoir.

Some 388,800 rainbow eggs were received by 11 December 1980. These were reared and held at the hatchery until April and May 1981. There were 50,031 planted in the Dry Bed area of the Snake River; <sup>1</sup>50,024 were planted in Mackay Reservoir; and 85,375 were planted in Ririe Reservoir. Others of this group were planted in high lakes. We received 506,080 spring-spawning rainbow in April 1981. These were reared to fingerling size. Some 50,000 were transferred to Eagle Hatchery; 47,500 planted in Springfield Reservoir; and some 300,000 held at Mackay for rearing to catchable-size. The balance was planted locally in high lakes and streams.

Brook trout were received from Cornell University on 18 December 1980. These are a special strain of trout and are reared at Mackay especially for Henrys Lake, and 20,060 fish from these eggs were planted at the Wild Rose Ranch planting site in September of 1981. They were going 34 fish-per-pound at planting time.

There were 1,085,564 cutthroat eggs received in late April and early May of 1981. From these eggs, 904,840 fingerlin<sup>g</sup> were planted in Henrys Lake in September. Approximately 300,000 of these were fluorescent dye-marked and planted at different sites for later planting site identification.

Also, 78,880 cutthroat x rainbow hybrids were received in April of 1981. These eggs were not good-quality eggs. The fish that survived were reared and planted in mountain lakes by helicopter as fingerlings.

Some golden trout were spawned at Mackay, and the resultant 1,505 fingerling reared were planted in certain high lakes by helicopter.

The numbers of pounds of fish produced by species were:

Cutthroat	0-3"	6,622 lbs
Rainbow	0-3"	3,121 lbs
Rainbow	6" or larger	107,656 lbs
Brook	0-3"	590 lbs
Brook	6" or larger	150 lbs
Coho	0-3"	11,557 lbs
Golden	0-3"	8 lbs
Ct x Rb hybrids	0-3"	106.5 lbs
	Total	129,810.5 lbs

Numbers of fish produced by species were:

Cutthroat	0-3"	904,840
Rainbow	0-3"	700,547
Rainbow	6" or larger	308,106
Brook	0-3"	20,060
Brook	6" or larger	300
Coho	0-3"	797,431
Golden	0-3"	1,505
Ct x Rb hybrids	0-3"	21,180
	Total	2,753,969

From this total, 300,205 rainbow are being held over for the coming year's production of catchable fish.

## FISH HEALTH

There were no fish disease problems at Mackay this year. We had some problems during the spring months with the parasite Costia. This parasite is ever-present here. When the opportunity is right for it, it can become a problem to our fish.

Proper cleanliness of ponds and proper pond loading are the main factors causing disease at Mackay. We had ponds extremely overloaded, but by applying a steady program of pond cleaning, we kept disease outbreaks to a minimum.

## FISH RELEASES

The fish planting season started out slowly because of cool weather and late spring rains. High water remained in the area until late June. When we did get started planting fish, we kept both trucks on the road and got most of the fish planted at the scheduled times. Fishing was good in the area, and we received many good reports from satisfied fishermen.

No special problems were encountered during the planting season. Some high lakes were not planted because all available cutthroat were scheduled for Henrys Lake; thus a shortage of fish for high lake planting.

## SPAWNTAKING OPERATIONS

A few golden trout were spawned at Mackay this year. Approximately 3,000 eggs were taken. From these, 1,500 fingerling were planted in certain high lakes. The eggs were poor quality. The females were old, and not vigorous fish. They did not ripen well, and males and females had a tendency to ripen at different times. Frequent handling over an extended spawning period proved more than the fish could stand. At the end of the season all spawners died.

## FISH FEED UTILIZED

A total of 200,600 lbs of fish feed was fed to rear the fish. The food used was Rangens brand. We received a few shipments of feed which were excessively dusty. We received some additional feed from them to compensate for the dust, which is waste. Generally, the feed was good and the fish grew well with it.



The fish feed cost was \$43,605.69. A feed conversion ratio of 1.54 was achieved. The cost per pond of fish produced was \$.21, using only feed costs in cost calculations. Total production costs for the fish reared at Mackay was approximately \$1.06 per pound, including all costs.

#### HATCHERY IMPROVEMENTS

A new asphalt shingle roof was put on house #3.

A new wall paneling job was done to one end of the living room of house #2. A small fire started from a candle on the fireplace mantle and burned a portion of this wall. The hatchery crew replaced this paneling.

No other large maintenance projects were initiated this year. Keeping the supply pond clear of weeds and screen and rack repair took most of our available time. Lawn and yard maintenance was an important item, and the hatchery looked well during the year for our efforts.

#### SPECIAL STUDIES ,

Two new strains of brook trout were reared by Mackay Hatchery for Henrys Lake. These were the Assinica Lake strain and the Temiscamie strain. These originate from Canada and were sent to us by Cornell University. These are being reared in conjunction with Idaho State University. They fin-clip the fish for identification and do the followup research on them. These fish are alleged to live longer and get larger than the ordinary brook trout. Hopefully, these will enhance the Henrys Lake fishery.

Coho were fluorescent-dye-marked for Cascade Reservoir. The three different color-marked lots of fish were planted in different locations to try to determine planting site desirability.

Three different lots of cutthroat for Henrys Lake were also dye-marked to try to determine planting site desirability.

#### MISCELLANEOUS ACTIVITIES

Some 32 high mountain lakes were planted by helicopter. An additional 50 were scheduled to plant, but could not be planted because of the unavailability of cutthroat fry.

## HATCHERY NEEDS

A cover for the hatchery supply pond is needed to keep down weed growth. Too much time is required to keep it clean under present conditions. Water quality improvement would also result. A total disaster and loss of hatchery production is always a possibility with the heavy infestation of weeds. The grillwork that is in place catches weeds, and if a large mass of weeds comes down at once, it completely shuts off the waterflow to the large pipe servicing our eight large-production raceways.

If the hatchery must continue to supply the large numbers of cutthroat to Henrys Lake, two additional smaller raceways could be constructed adjacent to the existing eight small raceways.

Deeper rearing vats in the hatchery building would be desirable. Also, the water distribution system in the hatchery building needs to be changed so that the water could be admitted to the vats in such a manner that the stream of water does not enter the surface of the water in the vats. Putting it into the vat from a greater height would allow for some aeration. The way it is presently installed, this is not possible.

## ACKNOWLEDGEMENTS

Hatchery staffing during the year included:

Robert Vaughn, Fish Hatchery Superintendent II;  
James McLin, Fish Hatchery Superintendent I;  
Lynn Watson, Fish Culturist.

All of the aforementioned are permanent hatchery personnel.

Temporary helpers during the year were:

Sharon Wingert, one month, and  
Iris Widgren for four months.

The two temporary employees worked during the spring and summer months.

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